

Appl. No. 09/939,543
Amdt dated December 16, 2003
Suppl. Reply to Office Action of July 25, 2003

AMENDMENTS TO THE CLAIMS

Listing of Claims

Claim 1 (previously amended)

Claim 2 (original)

Claim 3 (currently amended)

Claims 4 (original)

Claim 5 (previously amended)

Claims 6 through 8 (original)

Claim 9 (previously amended)

Claims 10 through 11 (original)

Claims

1. (Previously Amended) An irradiation apparatus comprising:

a NEMA 4 watertight housing that forms an enclosure and which has a floor in which an irradiation window opening is defined,

a quartz window disposed across said window opening in watertight sealed engagement therewith,

a microwave excited ultraviolet radiation generator that includes an electrodeless lamp that produces ultraviolet radiation positioned within said watertight housing proximate said window opening to emit said ultraviolet radiation through said quartz window to an area at the exterior of said housing beneath said quartz window,

a reflector positioned within said enclosure relative to said microwave excited ultraviolet radiation generator to focus ultraviolet radiation therefrom upon said quartz window,

an air inlet duct to said housing for directing cooling air toward said electrodeless lamp, and

an air outlet duct from said housing for withdrawing from said housing air that has passed said electrodeless lamp.

2. (Original) An irradiation apparatus according to Claim 1 further comprising a baffle located within said watertight housing and positioned in the path of said air inlet duct to aid in deflecting air from said air inlet duct toward said electrodeless lamp and on to said

air outlet duct.

3. (Currently Amended) An irradiation apparatus according to Claim 1 further characterized in that said baffle has perforations defined therethrough.

4. (Original) An irradiation apparatus according to Claim 1 wherein said floor of said watertight housing is formed of stainless steel and said watertight housing is further comprised of laterally enclosing upright stainless steel walls extending up from said floor and a stainless steel lid to which said air inlet and air outlet ducts are joined.

5. (Previously Amended) Apparatus for irradiating packaging materials to neutralize harmful bacteria comprising:

a NEMA 4 waterproof housing that forms an enclosure and which has a floor in which an irradiation window opening is defined,

5 a quartz window disposed across said window opening in watertight, sealed engagement therewith,

a microwave excited ultraviolet radiation generator that includes an electrodeless lamp that produces ultraviolet radiation positioned within said watertight housing proximate said window opening to emit said ultraviolet radiation through said quartz window to packaging materials located outside said housing beneath said quartz window,

10 a reflector positioned within said enclosure relative to said microwave excited ultraviolet radiation generator to focus ultraviolet radiation therefrom upon said

quartz window,

15 an air inlet duct to said housing for directing cooling air toward said
electrodeless lamp, and

 an air outlet duct from said housing for withdrawing from said housing
air that has passed said electrodeless lamp.

6. (Original) An apparatus according to Claim 5 further comprising a deflecting
baffle located within said watertight housing aligned with the path of air flow through said
air inlet duct, whereby said baffle aids in deflecting air from said air inlet duct toward said
electrodeless lamp.

7. (Original) An apparatus according to Claim 6 wherein said baffle has
perforations defined therethrough.

8. (Original) An apparatus according to Claim 5 in which said floor of said
watertight housing is formed of stainless steel and said housing is further comprised of
upright stainless steel walls surrounding said ultraviolet radiation generator and a
removable stainless steel lid located atop said upright walls, and said air inlet and said air
5 outlet ducts are joined to said stainless steel lid in perpendicular orientation relative to said
floor, and said housing is further comprised of a compressible, watertight gasket interposed
between said removable lid and said upright walls to maintain a watertight seal
therebetween.

9. (Previously Amended) A method of irradiating articles of packaging to

neutralize harmful bacteria utilizing irradiation apparatus that includes:

a NEMA 4 watertight housing that forms an enclosure and which has a floor in which an irradiation window opening is defined,

5 a quartz window disposed across said window opening in watertight sealed engagement therewith,

a microwave excited ultraviolet radiation generator that includes an electrodeless lamp that produces ultraviolet radiation positioned within said watertight housing proximate said window opening to emit said ultraviolet radiation through said quartz window to an irradiation treatment area at the exterior of said housing beneath said quartz window,

an air inlet duct to said housing, and

an air outlet duct from said housing, the steps comprising:

conveying food packaging through said irradiation treatment area,

15 and

concurrently providing power to said electrodeless lamp to irradiate said food packaging to neutralize harmful bacteria thereon, and

focusing radiation from said electrodeless lamp onto said quartz window.

10. (Original) A method according to Claim 9 further comprising directing cooling air toward said electrodeless lamp.

Appl. No. 09/939,543
Amdt dated December 16, 2003
Suppl. Reply to Office Action of July 25, 2003

11. (Original) A method according to Claim 10 further comprising withdrawing
from said housing air that has passed said electrodeless lamp.